



Johnson Space Center  
Procedural  
Requirements

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12/14/2006  
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Change 1  
(8/13/07)

**VERIFY THAT THIS IS THE CORRECT VERSION BEFORE  
USE**

**COMPLIANCE IS MANDATORY**

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## **JSC Foreign Object Debris (FOD) Damage Prevention Program**

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**Responsible Office: Engineering Directorate**

JPR No.:	5335.5
Effective Date:	12/14/2006
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	Change 1
	8/13/2007

### Change History Log

Revision	Effective Date	Description of Changes
Baseline	10/06	Initial Release: JPR 5335.5 establishes the JSC Foreign Object Debris (FOD) Damage Prevention Program
Change 1	8/13/2007	Added URL to TOC & App 1

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## **PREFACE**

### **P.1 PURPOSE**

JPR 5335.5 defines the implementation for the Johnson Space Center (JSC) Foreign Object Debris (FOD) Damage Prevention Program. The purpose of the Program is to plan and carry out production and service provision under controlled conditions; specifically including the prevention, detection, and removal of foreign objects from workplaces where critical and complex work is performed.

### **P.2 APPLICABILITY**

JPR 5335.5 governs the FOD Damage Prevention Program at JSC.

A FOD control program usually addresses contamination. At JSC, contamination control is governed by JPR 5322.1 *JSC Contamination Control Requirements Manual*. Where FOD is not specifically addressed as contamination in JPR 5322.1, JPR 5335.5 takes precedence.

### **P.3 AUTHORITY**

(All document citations are assumed the latest version unless otherwise noted.)

NASA Quality Assurance Program Policy - NPD 8730.5

### **P.4 APPLICABLE DOCUMENTS**

(All document citations are assumed the latest version unless otherwise noted.)

National Aerospace Standard – NAS 412 – Foreign Object Damage/Foreign Object Debris (FOD) Prevention

National Aerospace FOD Prevention, Inc. – FOD Prevention Guideline

SAE Aerospace Standard AS 9100

### **P.5 MEASUREMENT VERIFICATION:**

The OPR shall periodically assess effectiveness of the program through periodic audits.

### **P.6 CANCELLATION/RESCISSION:**

None

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## JSC Foreign Object Debris (FOD) Damage Prevention Program

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12/14/2006

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12/8/2006

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**Verify this is the correct version before use.**

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## **1.0 BACKGROUND**

There have been ongoing efforts across JSC to protect flight hardware from damage including FOD. This JPR 5335.5 formalizes various and ongoing efforts into a Center-wide approach to prevent damage from FOD under the auspices of the JSC FOD Damage Prevention Program consistent with the Center's AS 9100 certification.

## **2.0 SCOPE**

JPR 5335.5 applies to work areas at JSC where both critical and complex work is performed. Therefore, the prevention, detection, and removal of foreign objects and protection against FOD damage applies to all operations at JSC involved with designing, developing, manufacturing, assembling, testing, operating, repairing, modifying, refurbishing, and maintaining aerospace products.

## **3.0 DEFINITIONS**

### **3.1 Foreign Object Debris (FOD):**

A substance, debris, or article alien to a system that would potentially cause damage.

### **3.2 Foreign Object Debris (FOD) Damage:**

Any damage attributed to a foreign object that can be expressed in physical or economic terms that may or may not degrade the product's required safety and/or performance characteristics.

### **3.3 FOD Control Area:**

Any area where flight or other critical hardware is in place and exposure to foreign objects would potentially cause a critical facility, system, or product problem/failure due to deterioration, malfunction, or damage. A FOD Control area shall be clearly marked and controlled through division's local procedures in compliance to the division's plan for FOD prevention and protection.

### **3.4 Critical Work**

*Critical work is any hardware task that, if performed incorrectly or in violation of prescribed requirements, could result in loss of human life, serious injury, loss of mission, or loss of a significant mission resource (e.g., Government test or launch facility).*

(Source: NPD 8730.5, Attachment A)

### **3.5 Complex Work**

*Complex work involves either: a) the design, manufacture, fabrication, assembly, testing, integration, maintenance, or repair of machinery, equipment, subsystems, systems, or platforms; or b) the manufacture / fabrication of parts or assemblies which have quality characteristics not wholly visible in the end item and for which conformance can only be established progressively through precise measurements, tests, and controls applied.*

(Source: NPD 8730.5, Attachment A)

## 4.0 RESPONSIBILITIES

### 4.1 Office of Primary Responsibility

The Engineering Directorate Systems Engineering and Integration Office shall be the OPR for JPR 5335.5. Responsibilities will include maintaining a list of FOD control areas at JSC on the web. The effectiveness of the JSC FOD Prevention Program will be assessed through periodic reviews and audits.

### 4.2 Division Focal Points

Divisions where FOD Damage Prevention is required shall designate a focal point for FOD. The FOD Focal Point(s) shall review and assess their division's plans annually.

## 5.0 REFERENCES

**Table 5-1 Foreign Object Debris Damage Prevention References**

<b>Source</b>	<b>Reference Number</b>	<b>Reference Title</b>
National Aerospace Standard	NAS 412	<i>Foreign Object Damage/Foreign Object Debris (FOD) Prevention</i>
National Aerospace FOD Prevention, Inc.	N/A	<i>FOD Prevention Guideline</i>
Society of Automotive Engineers (SAE)	AS 9100	<i>SAE Aerospace Standard</i>
JSC	JPR 5322.1	<i>JSC Contamination Control Requirements Manual</i>
JSC	NT-CWI-003	<i>Quality Assurance Record Center Discrepancy Reporting and Tracking</i>
JSC	NPR 1440.3	<i>JSC Files and Records Management Procedures</i>
NASA Policy Directive	NPD 8730.5	<i>NASA Quality Assurance Program Policy</i>

## **6.0 GENERAL REQUIREMENTS - DIVISION PLAN**

Each Division shall maintain a controlled plan, which is tailored in accordance with each facility or project for FOD risk. More specific FOD guidance can be obtained from NAS 412 or the *FOD Prevention Guideline*. (See Section 5 above.)

The division plan shall address the following requirements. The plan shall:

1. Designate FOD Control Areas (Appendix A)
2. Measure performance including the number of incidents, a description of the severity of reported incidents, and frequency of visual inspections for FOD.
3. Identify training including training frequency and content.
4. Maintain records, including training records, incident reports, and inspection reports in accordance with JPR 1440.3.
5. Record all incidents of actual or potential FOD damage in the QARC DR system in accordance with NT-CWI-003.
6. Identify/develop existing operating procedures that address prevention, detection, and removal of FOD.



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**APPENDIX A. Appendix A - JSC Organization List of FOD Control Areas**  
[\[http://ea.jsc.nasa.gov/Facilities/index.cfm\]](http://ea.jsc.nasa.gov/Facilities/index.cfm)

<b>Building Number</b>	<b>Room Number</b>	<b>Organization</b>	<b>Facility Name</b>	<b>Division Plan Document Number</b>